the specification in that the equations, as corrected, stem directly from an equation used in Seto, William W., "Schaum's Outline of Theory and Problems of Acoustics," page 14. The Seto publication is referenced on page 97 of the specification as originally filed. Thus, no new matter has been introduced.

Entry of these Amendments and an early examination on the merits are respectfully requested. A replacement copy of page 97 of the specification is enclosed herewith. Attached hereto is a marked-up version of the changes made to claims 1 and 2 by the current amendments to comply with 37 C.F.R. § 1.121. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**."

Respectfully submitted,

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Enclosure

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

$$\text{ref}(t) = Ie^{-\tau t}\cos(\omega_d t \; [+] \; \theta) \quad t \geq 0\,,$$

$$\text{ref}(t) = Ie^{\tau t}\cos(\omega_d t \; [+] \; \theta) \quad t \leq 0$$

The reference signal can be created in two ways. The first method makes use of the fact that it is possible to synthesize or to write a function that will generate the pattern of the reflected echo. An example of a function that generates such a reference signal is:

$$ref(t) = Ie^{-\tau t}\cos(\omega_d t - \theta) \qquad t \geq 0$$
$$ref(t) = Ie^{\tau t}\cos(\omega_d t - \theta) \qquad t \leq 0$$

where, τ is the dumping factor derived from the transducer specification, ω_d is the dumped natural frequency derived from the transducer specifications, and θ is a phase correction, if necessary (William W. Seto, Acoustics, Schaum's Outline Series, McGraw-Hill Inc., USA, 1971). Fig. 51A is a reproduction of a computer screen showing an example of a synthesized reference signal calculated using the above formula.

In the second method an actual echo is sampled and stored in the computer memory for use as the reference signal. The second method is preferred, since it includes exactly the characteristics of all of the transmitting and receiving system including those of the transducer. Thus if, for example, the transducer (or any other component of the system) is replaced with another part having slightly different characteristics; it is possible to store the exactly expected reference signal in the computer memory by making a simple calibration measurement (for example in water). Fig. 51B is a reproduction of a computer screen showing an example of a pre-measured reference signal. In Figs. 51A and 51B. the horizontal axis represents time